

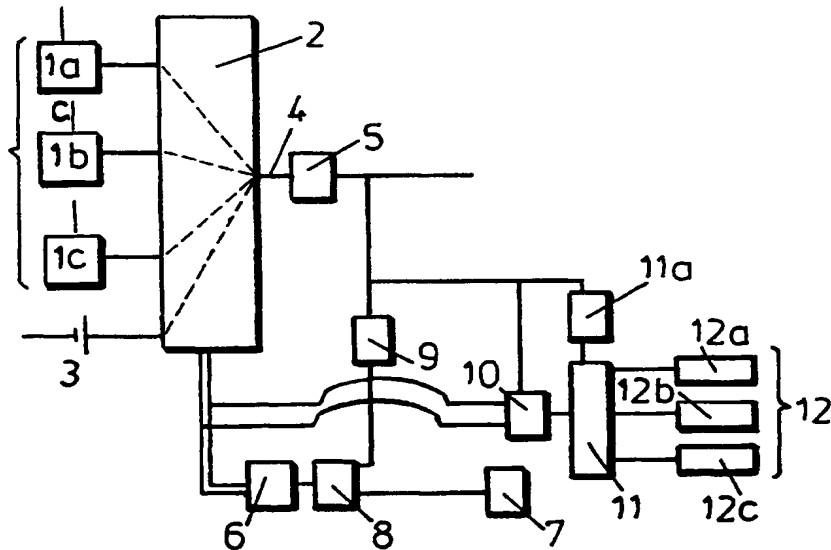
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(54) Title: SIGNAL PROCESSING APPARATUS AND METHOD

**WO 01/04861 A1**

(57) Abstract: A signal processing apparatus comprising a plurality of input channels each of which is connected to a respective input of a multiplexer, the multiplexer being arranged to connect each input to a common multiplexer output in a predetermined repeating sequence, and an output circuit connected to the common multiplexer output, wherein the output circuit is arranged to detect the presence at the common multiplexer output of a predetermined signal, to identify the input channel which was the source of the detected predetermined signal, and to output a signal representative of the identified input channel.

Published:

— With international search report.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PDR/X088434PWO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB00/02609	International filing date (day/month/year) 07/07/2000	Priority date (day/month/year) 09/07/1999
International Patent Classification (IPC) or national classification and IPC G08C15/06		
Applicant THT VICTORIA UNIVERSITY OF MANCHESTER et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

Date of submission of the demand 06/12/2000	Date of completion of this report 20.07.2001
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Wagner, U Telephone No. +49 89 2399 8171



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB00/02609

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-16 as originally filed

Claims, No.:

1-22 as originally filed

Drawings, sheets:

1/2,2/2 as received on 27/07/2000 with letter of 27/07/2000

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

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the drawings, sheets:

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):
(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:
- the entire international application.
- claims Nos. 21,22.

because:

- the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
see separate sheet
- the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- no international search report has been established for the said claims Nos. .
2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:
- the written form has not been furnished or does not comply with the standard.
- the computer readable form has not been furnished or does not comply with the standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N) Yes: Claims 1-20

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	No:	Claims
Inventive step (IS)	Yes:	Claims 1-20
	No:	Claims
Industrial applicability (IA)	Yes:	Claims 1-20
	No:	Claims

2. Citations and explanations
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/02609

Re Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

Claims 21 and 22 include a vague reference to the drawings. Their scope of protection is therefore highly unclear (Art. 6 PCT). Therefore, no meaningful statement under Art. 33 PCT can be made for them.

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. US 4 704 609 (D1, references relate to the figure) teaches a signal processing apparatus wherein a plurality of input channels (2) are connected to a multiplexer (4), the multiplexer being arranged to connect each input to a common output (6) in a repeating session controlled by a counter (inputs 8,10,12). D1 does not teach to arrange an output circuit at the common multiplexer output which detects the presence of a predetermined signal. Claim 1 is therefore new.

2. The signal at the common output of multiplexer 4 is displayed at a digital display monitor. The number of the input channel being the source of the displayed signal is indicated by one of LED's 62. From D1 it is not rendered obvious for a skilled person to foresee an output circuit at the common multiplexer output detecting the presence of a predetermined signal, since the signals received by the multiplexer of D1 correspond to the analogue value of a parameter. In claim 1 the predetermined signal is the occurrence of a logical one, which occurs infrequent (in the given example), but then leads to the storage of the input channel number. In D1 each input channel has a certain signal level any time it is connected to the common multiplexer output. A detection of a predetermined value in any of them in order to output a signal indicating the channel number is not suggested. The features of claim 1 are derived by the technical problem of frequently scanning a high number of parallel inputs, which only carry a relative small amount of information ("events" in the given example). This technical problem cannot be derived from D1, hence, its solution involves an inventive step.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/02609

3. US-A-3 959 767 (D2) does not go any further than D1. Analogue signals are multiplexed and A/D transformed. The sequence control receives the digitalised data and forwards it together with a channel stamp. D2 does neither disclose nor render obvious to detect the presence of a predetermined value in any of the data signals connected to the multiplexer output by the sequence control.
4. In EP-A-350 932 (D3) there is a fixed relation between an multiplexer input an a register cell. The control unit selects a multiplexer input and shifts its content (after A/D conversion) into the corresponding register, without detecting the value of it.
5. None of the documents D1-D3 renders the subject-matter of claim 1 obvious. The industrial applicability is out of the question. Claim 1 therefore meets the requirements of Art. 33(1) PCT.
6. Claims 2-18, being dependent on claim 1, and claims 19 and 20, claiming a corresponding method, also meet Art 33(1) PCT.